



## Dealing with Climate Change in Islamic Republic of IRAN

an Investigation into the Policies and Measures

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# Major impacts of climate change in Iran:

- Severe water shortages.
- More catastrophic weather events, such as droughts and floods.
- Desertification, loss of arable land.
- Shifting of ecosystems, species loss.
- Dust Storms and intensified air pollution



# Palmer Drought severity Index

IPCC 2007

### Drought related economic loss as a proportion of GDP density



FAO Land&Water

### Global physical and economic water scarcity

Global physical and economic water scarcity



# **Direct Impacts**

- Reduced crop, rangeland, and forest productivity
- Reduced water levels
- Increased fire hazard
- Damage to wildlife and fish habitat
- Increased livestock and wildlife mortality rates
- Increased insect infestations
- Increased plant disease
- Increased wind erosion

# Indirect Impacts

- Reduced income for farmers and agribusiness
- Increased prices for food and timber
- Increased unemployment
- Migration
- Increased crime and insecurity

# Floods more frequent

- July 2015
- April 2015
- March 2015
- June 2014
- April 2014

# Frequent Dust Storms





# Heavy Snows



# Fires in forests



# Forest loss

- 41 times fire in Mazandaran Province 69 hectares loss
- 40 hectares in Lorestan
- 50 hectares in Kordestan and Kermanshah

# Adaptation and Adaptive Capacity

- Lack of devices to predict the disasters on time
  - Floods
  - Storms
  - Heavy Snow and halestones
- Lack of awareness in the insurance companies to cover severe weather events
- Water intensive agriculture

# **Emissions and Mitigation**

# Population

• Population more than 75 million

• Urbanity 68%



Source: Germanwatch, 2015

### Iran in the top-ten list



<u>http://www.wri.org/blog/2015/06/infographic</u>
<u>-what-do-your-countrys-emissions-look</u>

- 86 % of emissions is by energy
- 715 million ton CO2 eq. 1.65% of Global emissions
- Per Capita: 7.73 40<sup>th</sup> in the world

# **Climate Change Performance**

 The Climate Change Performance Index (CCPI) is an innovative Instrument to evaluate and compare the climate protection performance of the 57 countries that together are responsible for more than 90 percent of global energy-related CO2 emissions

### **Climate Change Policy Index**



# Germanwatch CPI Key Results 2015

Good news from **Iran**. The new government that took over in summer has finally started to talk about climate protection and set some ambitious goals in the promotion of renewables. These developments are not yet reflected in the data but national experts see a positive prospect for the future. Iran's ranking has slightly improved (3 places) but still remains "very poor".



57		Turkey	46.60	
58	•	Canada	45.16	
59	-	Kazakhstan	39.96	
60	-	Islamic Rep. of Iran	35.81	
61	-	Saudi Arabia	26.90	
	-			

56	٠	Russian Federation	43.64
57	۲	Australia	41.53
58	-	Canada	40.39
59		Islamic Rep. of Iran	37.81
60	۲	Kazakhstan	37.64
61	-	Saudi Arabia	25.17

### Index Categories



Emissions Level (30% weighting)

Emissions Development (30% weighting)

> Renewable Energy (10% weighting)



Efficiency (10% weighting)

Policy (20% weighting)







# **General Political system**

 Democratic system established after the Islamic Revolution of 1979



Nation

### 1996

• UNFCCC Ratification

### 2003

• First National Communication Report

### 2005

• Kyoto Protocol Ratification

### 2006

• DNA established

### 2009

• First CDM Project Registered

### 2010

• Second National Communication Report

### 2013

• First national Climate Change Conference

### 2014

• Second National Climate Change Conference

### Up to 2015

• 24 CDM Projects

### **CDM Projects Distribution among Sectors**



### INTRODUCTION

CDM04138	2422	Seroesh & Newroos Early Gas Gathering and Utilisation Project (S&N project)	Bushely	Registered	Fugitive
CDM06350	4318	Pael Switching of AmirKahir Sugarcane Plant	Khapestat	Registered	Feedbard switch
CDM06362	4544	Fuel Switching of Salman Farvi Sugarcane Plant	Depetas	Registered	Fread fiel switch
CDM06768	4646	Fuel Switching of Imam Khemerini Sugarcane Plant	Khapestan	Registered	Feesil fact switch
CD1M06763	4549	Fast Switching of Mirza Kachak Khan Sagarcane Plant	Chapertan	Registered	Feedl fael rwitch
CDM04895	4561	Mashad landfill gas to energy project.	Razevi Kherasan	Registered	Landfill gas
CDM06760	4658	Fuel Switching of Dobal Khazaei Sugarcane Plant	Khanestan	Registered	Feedl Sort wetch
CDM06767	4753	Puel Switching of Hakim Farabi Sagarcane Plant	Khupestan	Registered	Freed fuel switch
CDM87731	5469	Switch from Single Cycle to Combined Cycle (CC) CDM Project at Shirvan Power Plant	North Khorasan	Registered	III supply side
CDM07740	5562	Switch from Single Cycle to Combined Cycle (CC) CDM Penject at Jahrom Power Plant	fan	Registered	EX supply side
CDM06070	7787	Piran Small Hydropower Plant CDM Project	Kermanshah	Registered	Hydro
CDM1P962	8249	Catalytic abatement of N2D in Nitric Acid Plant of Shiras Petrochemical Company	Fare	Registered	N29
CDIM12097	9712	Sirjan 480MW Combined Cycle Power Plain	Kerman	At Validation	Fossil fuel switch
CDM11981	9783	South Infahan Power Plant	Isfahan	At Validation	EE supply side
CDM12043	9814	Pareh Sat Combined Cycle Power Plant	Gilan	At Validation	EE supply side
CDM12262	9856	130 MW Aras (Gara Chilar) Hydropewer Plant.	East Attarbaijan	At Validation	Hydro
CDM12639	9995	Genaveh Combined Cycle Power Plant	Bushehr	At Validation	EE supply side
CDM05436	0.00	Badeshur Efficient Gas Pewer Plant	Markael	At Validation	EX supply side
CDM12141		GHG emission reductions through implementation of grid-connected Yazil 1 Combined Cycle Power Plant	Yant	At Validation	Fessil fuel switch
CDM12142		GHG emission reductions through implementation of grid-connected Dalahou Combined Cycle Power Plant	Kermanshah	At Validation	Pennil fuel switch
CDM12336		Kahak Wind Farm Project	Quevin	At Validation	Wind
CDM12151		Implementation of Co-generation plant for Production of Potable Water in Qeshm Juland	Hormotgan	At Validation	EE supply side
CDM12428		Flare Gas Recovery in Sarkboos and Qeshm Gas Treating Company	Hormotgan	At Validation	Fugitive
CDM05627		Switch from Single Cycle to Combined Cycle (CC) CDM Project at Sharvan Power Plant	Rorth Khorman	Replaced Validation Terminated	KK supply side
CDM10528		Mashad landfill gas to energy project	Ramet Klearanan	Replaced At Validation	Landfill gas

### **Energy Sector**

- Increase the energy efficiency of end-use sectors at the rate of 2% per year until 2025
- Increase of the share of CNG in transport from 2.5% in 2007 to 25% in 2025 at the rate of 1.25% per year
- Increase the share of natural gas in the industry sector from 59.4% in 2007 to 82% in 2025 at the constant rate of 1.8% per year
- Increase the share of natural gas in residential and commercial sectors from 66.5% in 2007 to 88% in 2025 at the constant rate of 1.55% per year
- Increase of the share of natural gas in power plants from 73% in 2007 to 100% in 2025 at the constant rate of 1.74% per year.
- Increase of the share of renewable by increasing the capacity of hydropower from 7,073.8MW in 2007 to 19,000MW in 2025, wind from 74MW in 2007 to 6,000MW in 2025 and nuclear power plants from zero in 2007 to 20,000MW in 2025 at a constant growth rate of 1% per year.
- Increase power plant efficiency from 34% in 2007 to 52% in 2025 at the rate of 1% per year.
- Decrease the loss of the grid from 24% in 2007 to 15% in 2025 at the rate of 0.5% per year.

# REDD+ and LULUCF

• The target is set on net amount of CO2 emissions in forestry and land use will be reduced to zero by 2020.

✓ Objectives and measures:

- reduction of illegal forest harvesting and land use change by 20% per year
- decrease wood fuel harvesting by 10% per year (mostly replaced by gasoil)
- ✓ and reduce GHG emissions by 20% through reforestation and forest rehabilitation.

Regional initiatives include a pilot carbon sequestration project supported by the UNDP

# Transportation: 19.5 % of emissions

- Upgrading the public transportation (buses and rail),
- Increasing the share of compressed natural gas (CNG) in transport.

### Feed in Tariffs

July 21st 2015

### 20 years Guarantee

Renewable Type	IR. Rials / kWh	*Euro	
		Cents/kWh	
Biomass Landfill gas to Electricity	2900	8.6	
Biomass Anaerobic Digestion	3150	9.3	
Biomass- incineration	5870	17.3	
Wind over 50MW	4060	12	
Wind equal to and lower than 50 MW	4970	14.7	
Wind less than 1 MW (specific to consumers	5930	17.5	
and limited to connection capacity):			
Solar farm over 10 MW	5600	16.5	
Solar farm lower 10 MW	6750	20	
Solar less than 100KW (specific to consumers	8730	28.3	
and limited to connection capacity)			
Solar less than 20 KW (specific to consumers	9770	28.9	
and limited to connection capacity)			
Geothermal	5770	17	
Expansion Turbines	1800	5.3	
Waste Heat Recovery in Industrial process	3050	9	
Hydro less than 10 MW	3700	10.8	
Other Renewables (not Hydro)	4873	14	

### \*converted from IRR to Euro by EX.com on 2<sup>na</sup>. September 2015

# **Research Needs**

- Climate Change Framing in Iran
- Climate Change Science and Policy Interactions
- Science, Policy and Public Communication flow
- Policy changes through time and exploring the reasons of this change

# THANK YOU

**Questions and Comments**